



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/632,273	07/31/2003	Warren M. Farnworth	MI22- 2379	5475
21567	7590	02/15/2005	EXAMINER	
WELLS ST. JOHN P.S. 601 W. FIRST AVENUE, SUITE 1300 SPOKANE, WA 99201			ROBERT, RUSSELL MARC	
			ART UNIT	PAPER NUMBER
			2829	

DATE MAILED: 02/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/632,273

Applicant(s)

FARNWORTH ET AL.

Examiner

Russell M. Kobert

Art Unit

2829

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 07 December 2004.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 31-48 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 42-44 is/are allowed.
- 6) ☒ Claim(s) 31-34, 37, 40, 41 and 45 is/are rejected.
- 7) ☒ Claim(s) 35, 36, 38, 39 and 46-48 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 1204 & 0105.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

1. Applicant's arguments with respect to claims 31-48 have been considered but are moot in view of the new ground(s) of rejection.
2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the entirety of the projection spaced from the substrate, described in new claim 46, must be shown or the feature(s) canceled from the claim(s). In Applicants' Figures, each of the projections are physically attached to the substrate. There is no "space" shown between each projection and the substrate. No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner,

the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

3. Claim 46 is objected to because of the following informalities:

The specification fails to disclose the arrangement of an entirety of the projection spaced from the substrate; the term "spaced" has best been interpreted to mean not physically connected or spaced apart.

Appropriate correction is required.

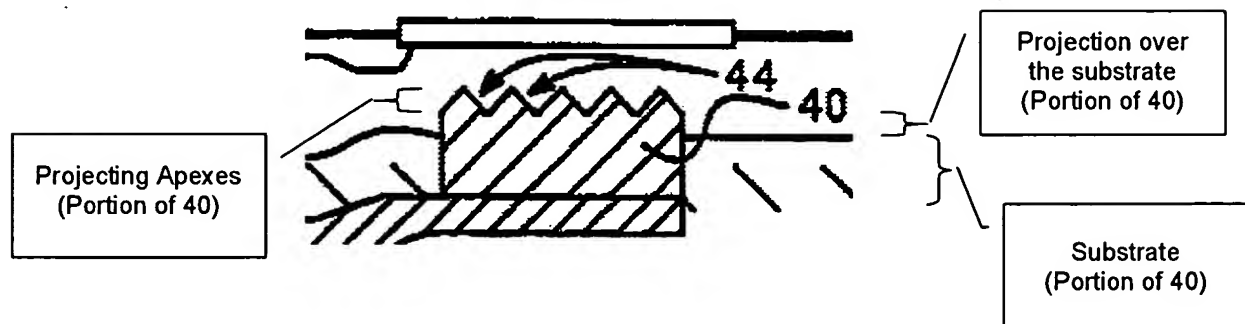
4. Claims 31-33, 41 and 45 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Agahdel et al (5402077).

Agahdel et al anticipates (Figure 4) an engagement probe (40) comprising:

A substrate (that portion of 40 as labeled below);

A projection supported over the substrate (that portion of 40 as labeled below) and comprising material of the substrate; and

A grouping of a plurality of projecting apexes (that portion of 40 as labeled below) extending from the projection and positioned in sufficient proximity to one another to collectively engage a single conductive pad (45) on a semiconductor substrate (22); as recited in claim 31.



Selected Portion of Figure 4

As to claim 32 the added limitation of comprising a plurality of such groupings for engaging multiple conductive pads on the semiconductor substrate (col 6, ln 51-54; Agahdel et al makes note of a more than one contact pad 40 and more than one die pad 45) is anticipated.

As to claim 33 the added limitation of the apices being in the shape of multiple knife-edge lines is anticipated (because Figure 4 is a cross-sectional view of Figure 3 along line 4--4, the "Projecting Apexes" are part of a 3-dimensional object having each cross-sectional component, or slice, as a "Projecting Apex." Thus the tips of all the slices in combination form a knife-edge line; see also col 6, ln 16-29).

As to claim 41 the added limitation of the conductive apices constitute a first electrically conductive material (col 6, ln 34-38; nickel or tungsten with gold deposited thereon), and wherein the conductive pads for which the probe is adapted have outermost portions constituting a second electrically conductive material (col 6, ln 23-25; die pad 45 made of aluminum); the first and second electrically conductive materials being different is anticipated.

As to claim 45, the added limitation of the plurality of projecting apexes extending from a substantially planar uppermost surface (note base of Projecting Apexes are linear to each other and therefore form a plane along line 4--4 of Figure 3) of the projection is anticipated.

5. Claims 31-33, 41 and 45 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Yarbrough et al (4700132).

Yarbrough et al anticipates an engagement probe comprising:

A substrate (16);

A projection (lower portion of 50) supported over the substrate and comprising material of the substrate; and

A grouping of a plurality of projecting apexes (upper portion of 50) extending from the projection and positioned in sufficient proximity to one another to collectively engage a single conductive pad (48) on a semiconductor substrate (44); as recited in claim 31.

As to claim 32 the added limitation of comprising a plurality of such groupings for engaging multiple conductive pads on the semiconductor substrate (col 3, ln 1-13) is anticipated.

As to claim 33 having the apexes in the shape of multiple knife-edge lines is an inherent attribute of contact head 50.

As to claim 41 the added limitation of the conductive apexes constitute a first electrically conductive material, and wherein the conductive pads for which the probe is adapted have outermost portions constituting a second electrically conductive material;

Art Unit: 2829

the first and second electrically conductive materials being different is anticipated because Yarbrough et al notes at least two types of materials that can be used for pins 16, specifically either gold-on-gold or nickel on steel (col 4, ln 43-45) and as such no outermost portion of conductive pads 48 can be of more than one material.

As to claim 45 the added limitation of the plurality of the projecting apexes extending from a substantially planar uppermost surface of the projection is considered inherent to Yarbrough because the bases of the apexes of each contact head 50 lie in the substantially the same plane.

6. Claims 31, 33, 34, 40 and 45 rejected under 35 U.S.C. 102(b) as being clearly anticipated by Stowers (4417206).

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over Agahdel et al (5402077) or Yarbrough et al (4700132) or Stowers (4417206).

Although Agahdel et al or Yarbrough et al or Stowers fails to specifically state the added condition of the apexes having a selected projecting distance, the projecting distance being about one-half the thickness of the conductive pad which the apparatus is adapted to engage, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have set the range of acceptable projecting distances to meet the selected criteria because claim 37 exhibits limiting conditions determined by routine experimentation and is considered to be within the scope of the invention as disclosed in Agahdel et al or Yarbrough et al or Stowers.

Where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. In re Swain et al., 33 C.C.P.A. (Patents) 1250, 156 F. 2d 239, 70 USPQ 412 ; Minnesota Mining and Mfg. Co. v. Coe, 69 App. D.C. 217, 99 F. 2d 986, 38 USPQ 213 ; Allen et al. v. Coe, 77 App. D. C. 324, 135 F. 2d 11, 57 USPQ 136 .

10. The following is a statement of reasons for the indication of allowable subject matter:



Claims 35, 36, 38, 39 and 47-48 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The added limitation of the apexes in the shape of multiple knife-edge lines wherein the multiple knife-edge lines are positioned to form at least two polygons one of which is received entirely within the other as detailed in claim 35 has not been found.

The added limitation of the grouping of apexes being formed on the projection which is supported by another projection, the another projection extending directly from the substrate as detailed in claim 36 has not been found.

The added limitation of the apexes projecting from a common plane of the projection, the apexes having respective tips and bases of adjacent projecting apexes and being spaced from one another to define a penetration stop plane therebetween as detailed in claim 38 has not been found.

The added limitation of the apexes projecting from a common plane of the projection, the apexes having respective tips and bases of adjacent projecting apexes and being spaced from one another to define a penetration stop plane therebetween, the tips being a distance from the penetration stop plane of about one-half the thickness of the conductive pad which the apparatus is adapted to engage as detailed in claim 39 has not been found.

The added limitation of the substrate comprising bulk silicon as detailed in claim 47 has not been found.

The added limitation of the projection comprising a lateral dimension less than a lateral dimension of the substrate as detailed in claim 48 has not been found.

The limitations of claims 42-44, based on previously presented claims 34, 35 and 40, and now in independent form, have not been found.

It is further noted that the examiner's reasons are understood to be predicated upon consideration of each of the claims as a whole, and not upon any specific elements of the claims.

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Art Unit: 2829

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Russell Kobert whose telephone number is (571) 272-1963.

The Examiner's Supervisor, Nestor R. Ramirez, can be reached at (571) 272-2034.

For an automated menu of Tech Center 2800 phone numbers call (571) 272-2800.



Russell M. Kobert  
Patent Examiner  
Group Art Unit 2829  
February 8, 2005



VINH NGUYEN  
PRIMARY EXAMINER

A.U. 2829  
02/10/05